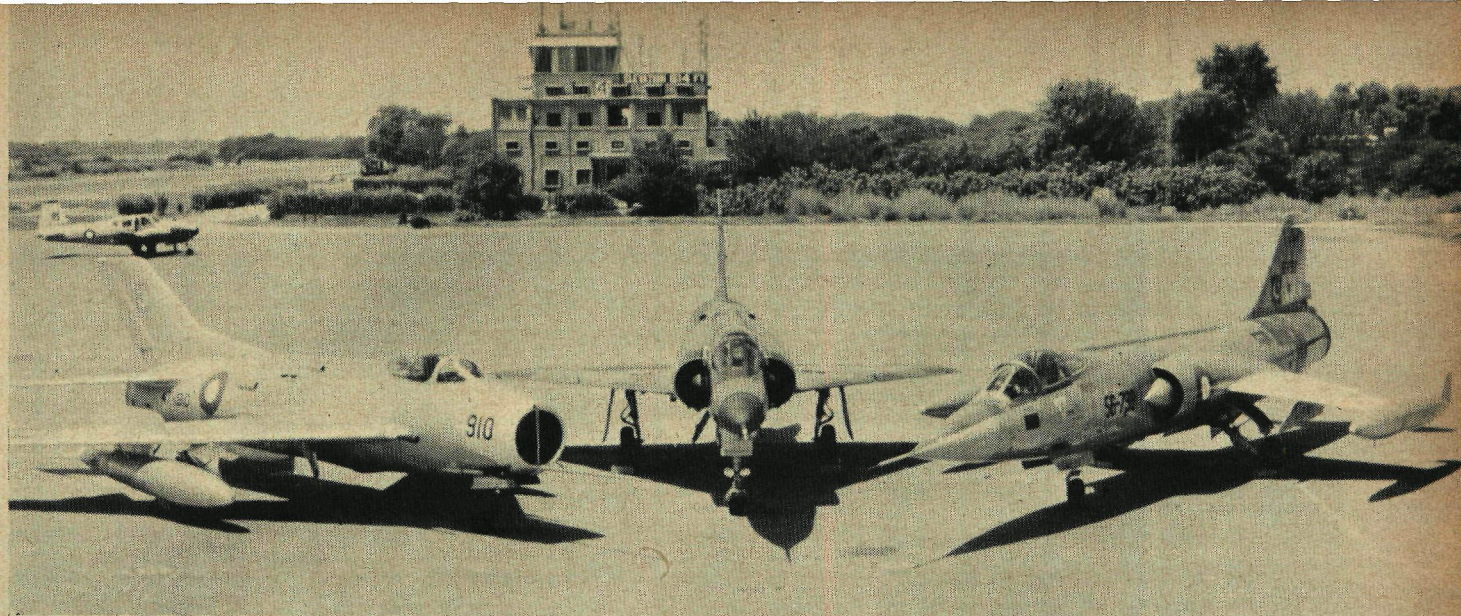




PAKISTAN'S AIR POWER

By JOHN FRICKER

IN THE PAST TEN YEARS OF President Ayub Khan's regime, Pakistan has made great progress politically and economically in the evolution of its present key position between East and West. Militarily, it is still nominally committed to the Cento and SEATO pacts for collective action against possible Communist aggression. In recent years, however, its geopolitical situation has bred a more independent and realistic foreign policy tending towards non-alignment in general, and peripheral defence against India in particular.

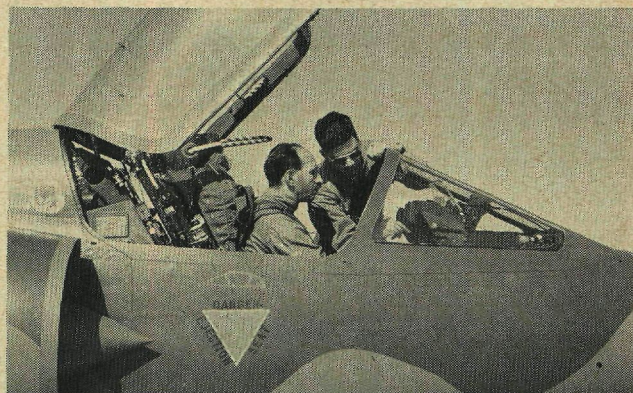
There was no ambiguity, so far as Pakistan was concerned, as to the location of its main military threat, even before the 1965 war with India. This had the unexpected advantage, however, of freeing the Pakistan Government from its political and military ties with the United States, following the sudden cessation of Military Assistance Programme funding and procurement, on which it had previously been entirely dependent for defence purposes. Pakistan was then immediately forced to look elsewhere for military equipment, both for long-term procurement and for sufficient spares to keep its completely US-equipped air force from being grounded.

This is why today the Pakistan Air Force is flying such a polyglot mixture of aircraft, with American F-104A Starfighters operating from the same base as Chinese-built MiG-19s and French Mirage IIIEPs. And there seems little doubt, from the recent visits of Pakistan military missions to Moscow, that these will be joined before too long by Soviet-supplied MiG-21s and possibly Sukhoi Su-7s, which will place the PAF in an even more unique position.

No air force likes operating such a diversity of equipment, and the high standards of serviceability achieved are a tribute to the resourcefulness of PAF maintenance personnel. This is symptomatic of the entire Pakistan Air Force organisation, which has to make up with quality what it inevitably lacks in quantity, compared with its opposition.

When India and Pakistan went to war in September 1965, the Pakistani Army began operations with few illusions as to the degree of close support it could expect from its air force.

Above, Pakistan's supersonic trio, left to right; MiG-19, Dassault Mirage IIIEP and Lockheed F-104A Starfighter. Below, the C-in-C of the PAF, Air Marshal Nur Khan, believes in first-hand experience of all types under his command. Here he checks out in one of the first Mirage IIIEPs to arrive in Pakistan



India outnumbered Pakistan by about five to one in the air; and against substantial numbers of British-supplied Hunters and Canberras, plus Indian-built Gnats and the first squadron of Mach 2 MiG-21 fighters from the Soviet Union, the PAF could field only 12 early model Starfighters, six Sabre squadrons equipped from 102 F-86Fs originally received under MAP, and a couple of squadrons with 24 Martin B-57B Canberras.

Both sides claimed to have destroyed about 100 of each other's aircraft during the 23-day war. Since this number represented virtually the entire first-line strength of the PAF

PAKISTAN'S AIR POWER ...

at that time, however, the Indian claim was easily disproved by the Pakistanis flying 86 Sabres, ten Starfighters and 20 Canberras in a parade soon after the end of the war. Pakistan then listed its losses of 19 aircraft (also confirmed by the US Military Assistance Advisory Group) in detail, including only nine as a direct result of enemy action, while India was said eventually to admit to the loss of at least 75.

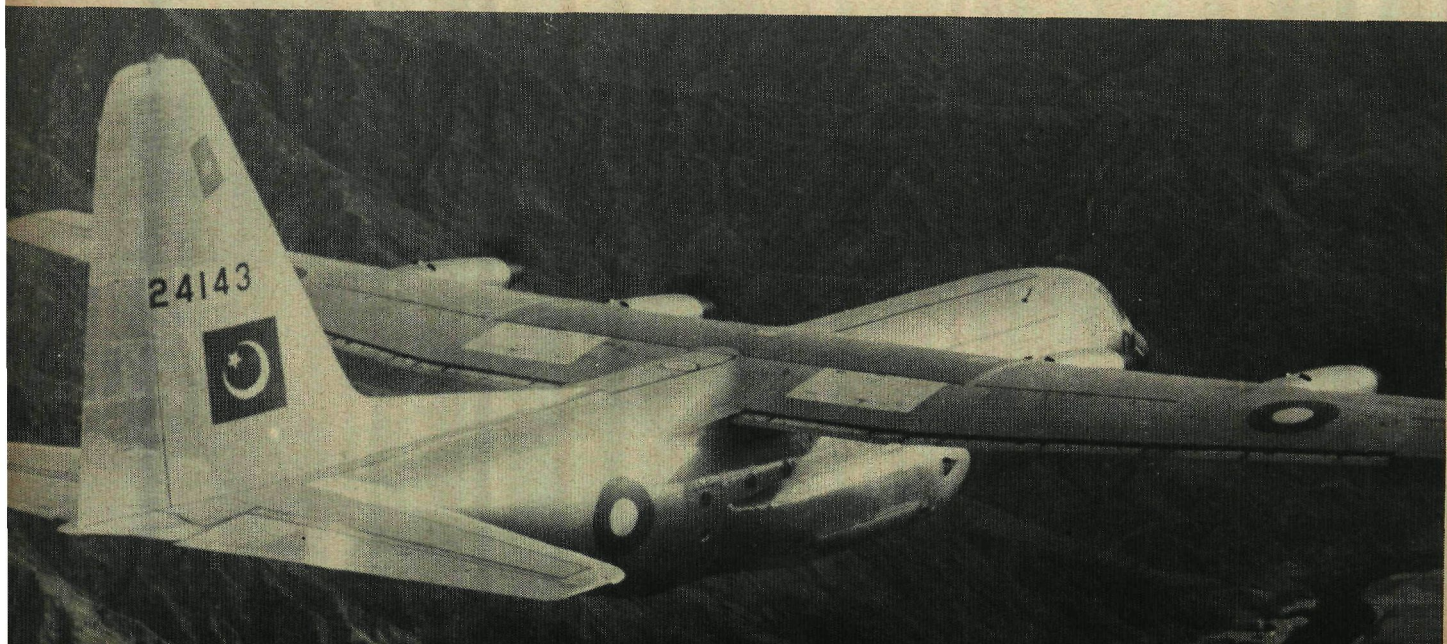
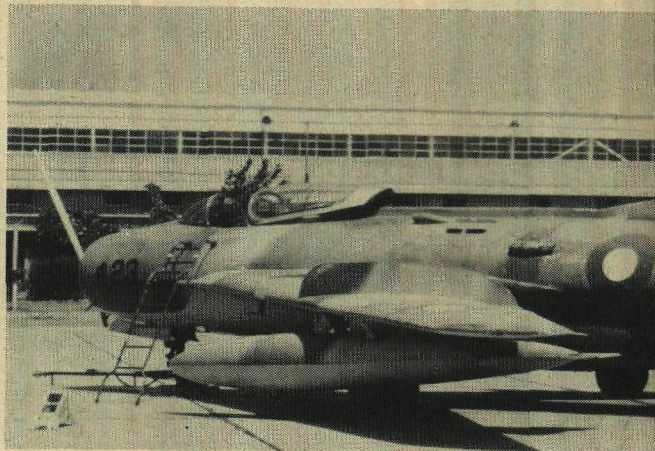
More important than statistics, however, was the fact that the unexpectedly effective close support for Pakistani troops provided by the PAF altered the entire complexion of the land battle. By the second day of operations, the PAF was claiming complete air superiority over the battle area. This, more than any other single factor, was considered responsible for neutralising the large disparity in military strengths between the two countries, and gave Pakistan a new confidence in its air force as an instrument of foreign policy.

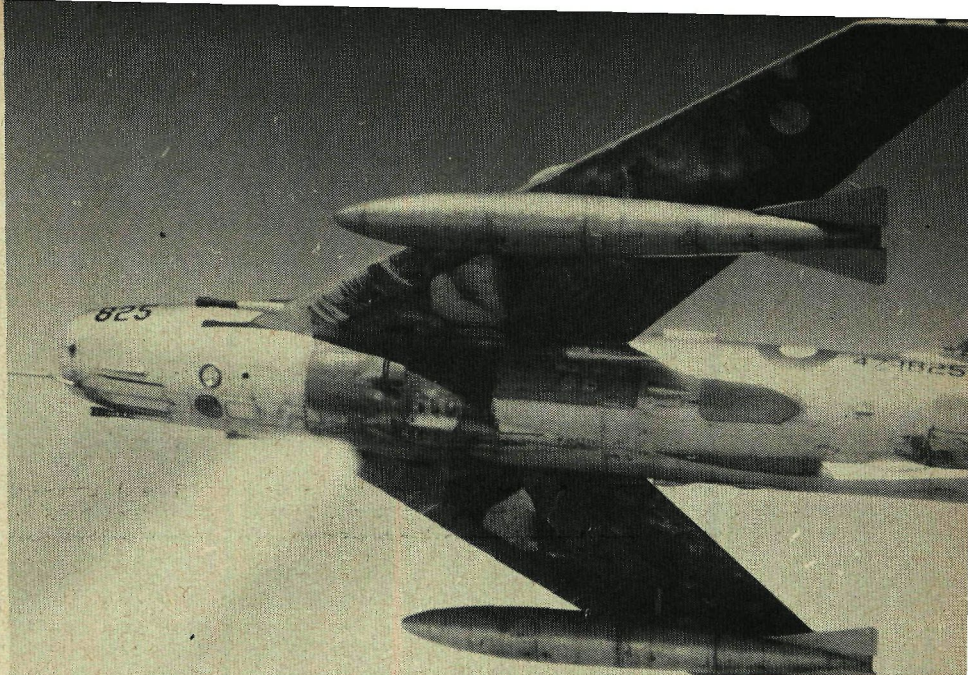
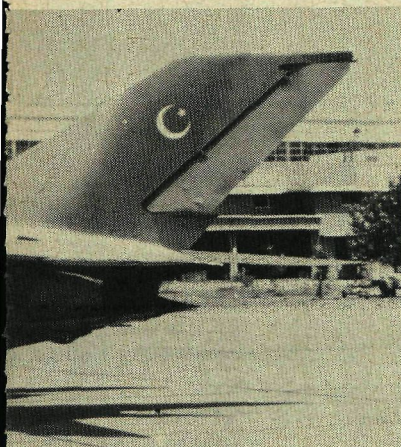
No visit to Pakistan can fail to convey the impact of the Indo-Pak war, which still looms large on the PAF horizon. It was both justification and encouragement for the PAF doctrine that personnel quality, high standards of training and aggressive leadership can more than offset numerical superiority, at least for a time. All these requirements were present in the PAF, which continues to be fortunate in its direction by the same Commander-in-Chief, Air Marshal M. Nur Khan.

A man of remarkable personality, originally commissioned as a fighter pilot in the then Royal Indian Air Force early in 1941, the air marshal took over control of the PAF a few weeks before the start of hostilities, after putting the Pakistan national airline on a sound basis over the previous five or six years. From occasional trips in PIA's Boeing 707s, he moved without pause into the cockpit of Sabres, Starfighters, MiG-19s and every new type of combat aircraft available, demonstrating air-to-ground gunnery scores of up to an extraordinary 100 per cent in the process.

Right, one of the MAP-supplied Kaman HH-43B helicopters used for aerial firefighting and SAR; and below, a Lockheed C-130B Hercules of the PAF Transport Wing over typical mountainous Karakoram country, where 60 per cent or so of their operations take place

Spearheading the PAF tactical fighter force is a wing of Chinese-built MiG-19s, operating in both interception and ground-attack roles. The third 30mm cannon can be seen just behind the white VHF aerial of the photographic MiG-15 in the right-hand view. For ground attack the big wing tanks are replaced by bombs, rocket pods or other stores





Air Marshal Khan displays the same fervour about his air force as did the original leaders of the RAF, with which he likes to draw a comparison. "We are limited in size, so we can only improve in quality," he said in a recent interview at Air HQ, Peshawar. "Our emphasis is therefore on training of the individual, and we are very selective. We have a high wastage rate, but are getting the pilots we want. Some are occasionally taken off flying even after joining a squadron, if they cannot meet the required gunnery standards. But if we can improve our overall proficiency by about 25 per cent, this is virtually as good as doubling our striking power. Our eventual intention is that no squadron pilot should be graded as less than above average."

In the PAF, too, above average means a rather higher classification than in most other, and considerably bigger, air forces. Compared with the USAF, for example, whose standards the PAF largely adopted in place of its original RAF organisation after it began receiving MAP equipment in 1954-55, a Pakistani pilot is required to score 55-69 per cent in air-to-ground gunnery instead of 37-59 per cent to be graded "above average." The "exceptional" grading is similarly up-rated between 70 and 100 per cent by the PAF, while the USAF accepts 60 per cent and above for this standard. An "average" grading in the PAF means scores of 40-54 per cent (which corresponds approximately to the USAF "above average"), while the American equivalent is gained with 25-36 per cent.

Similarly, with air-to-ground rocketry, the PAF requires hits within 25ft of a target to score an "exceptional," compared with 30ft by the USAF. Corresponding standards in the remaining categories are: above average, PAF 26-40ft, USAF 31-45ft; average, PAF 41-57ft, USAF 46-60ft; below average, PAF 58ft and above, USAF 61ft and above. What is more, during the most recent armament competition for PAF fighter squadrons, in January 1968, an overall average of 28.1ft in rocket accuracy was achieved, which would result in an "exceptional" overall assessment by international standards. For ground strafing gunnery, the overall average score of 55.8 per cent would qualify for a high "above average" grading.

PAF weapon training has been restricted by ammunition supply problems following the cessation of US aid, which has only recently allowed the resumption of lethal spares procurement; but the 1968 competition results nevertheless showed an improvement of around 20 per cent over the previous year. Attention is now being turned towards corresponding improvements in air-to-air gunnery, which had been suspended, apart from ciné practice, because of the lack of a suitable target.

This is being remedied by the purchase of the supersonic Dart system.

When the first Pakistani C-in-C, Air Marshal M. Asghar Khan, took over command of the PAF in 1957 from his RAF predecessors, additional reorganisation followed the initial period of modernisation, which had begun with the receipt of US military aid. In place of its earlier group structure, the PAF was established with a single main Command, assuming some of the characteristics of its present organisation, although war experience in 1965 indicated the desirability of a separate HQ with responsibility for all operational elements under unified control.

As currently organised under the Pakistan Ministry of Defence, the PAF allocates to the C-in-C dual functions handled by separate staffs and personnel. Overall direction and control is exercised by the C-in-C from Air HQ, where he is assisted and advised by a Deputy Chief of Air Staff and four Assistant CAS, with the rank of air commodore, respectively in charge of Operations, Maintenance, Training and Administration. The command function, on the other hand, is delegated to HQ Operational Command, which, under AVM S.A. Yusuf, controls all the combat elements of the PAF—fighters, bombers and transports, as well as radar, guns, etc—within two sections, for tactical army support and for air defence.

So while maintenance and administrative functions of the operational units are controlled through Air HQ, considerable authority on the flying side is decentralised to the stations to make them as self-sufficient as possible in combat. Major bases have station commanders of air commodore rank, which is commensurate with their authority and is also designed to give them a longer active career between staff jobs. At these bases, the command structure is organised on a three-prong system, following the original RAF pattern, with flying, maintenance and administration wings, each with its own staff officer and OC.

Flying wings usually have several squadrons, whose statutory strength in the PAF is 16 aircraft, although in practice the numbers frequently vary from 12 to 25. Squadron commanders are usually of wing commander rank (though occasionally squadron leaders), assisted by two squadron leaders or flight lieutenants as flight commanders, to plan and execute all training and operational commitments. Forward bases sometimes have several flying wings on one station, each of which also has a search and rescue flight. The PAF has been using the Kaman HH-43B helicopter, equipped for crash fire-fighting, as its standard SAR equipment, although it now also operates the Sud Alouette 3. For its international SAR commitments, as

PAKISTAN'S AIR POWER . . .

well as for limited maritime reconnaissance duties, the PAF operates the Grumman HU-16 Albatross amphibian from Mauripur, Karachi.

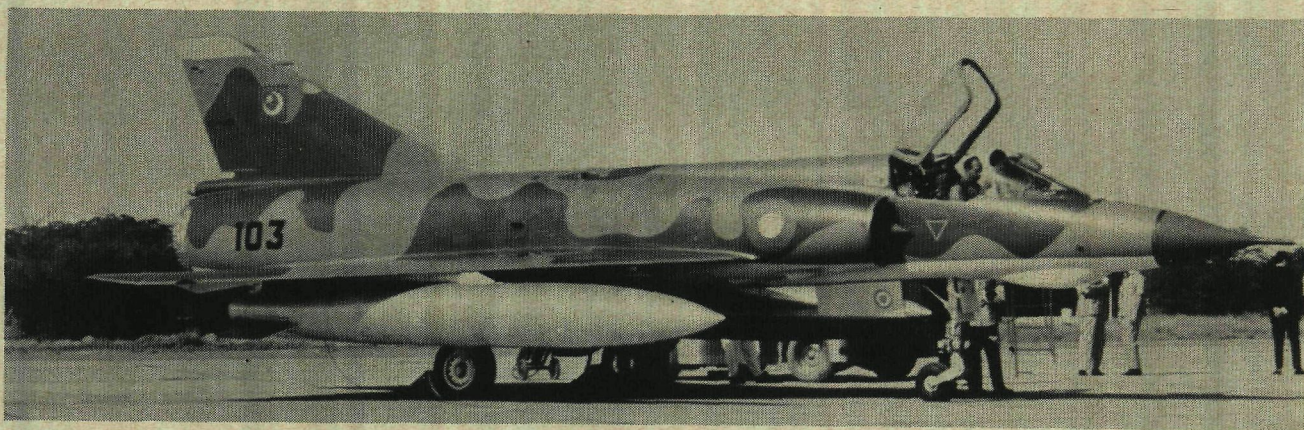
Having started life in 1947, after the partition of India, with two fighter squadrons and one of transport aircraft, a communications flight and an AOP flight, the PAF was built up with MAP assistance into an effective modern force of ten squadrons in its first decade. Except for its small B-57 bomber element, it was as an all-Sabre force that the PAF faced India's greatly superior air power in 1965, and even today the main Pakistani air strength rests on the versatile F-86. About half-a-dozen PAF fighter-bomber squadrons still operate Sabres, US sources claiming that 90 Orenda-powered Mk 6s, ostensibly bought by Iran from West Germany in 1966, remained in Pakistan after overhaul. The F-86 is regarded by the PAF as still extremely effective for its combat requirements, which proved in 1965 to be essentially low-level, with emphasis on manoeuvrability and acceleration rather than on pure high-speed performance and sophistication.

In these respects, when denied new combat equipment from the West after the 1965 war, the PAF found the brand-new locally built MiG-19s offered by the People's Republic of China without cost or political and military strings of any kind almost tailor-made for its needs. Although generally superseded in Soviet and Communist air force service, the MiG-19 combines a Mach 1.4 performance at altitude with

outstanding manoeuvrability and acceleration, multi-mission capability and good firepower.

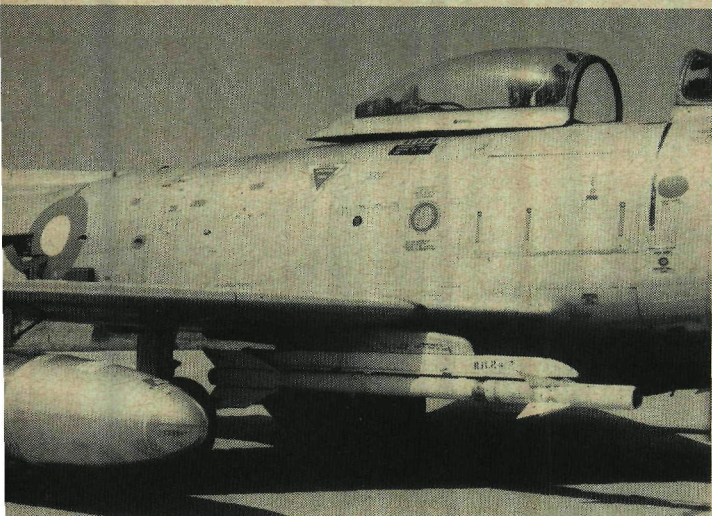
If the PAF was not to be grounded through the sudden deprivation of its supplies, MiG-19 induction had to be as rapid as possible, at the same time as alternative sources were sought for American spares. But acquisition of the MiGs presented many problems of operation and maintenance under very different concepts from those previously employed by the PAF. The MiG is, of course, an all-metric aircraft, and had to be accepted without anything like enough written material—nearly all of which was in Chinese—or even a set of pilot's notes. A nucleus of Pakistan personnel went to China towards the end of 1965 for initial conversion, and it says much for PAF flying and technical standards that the first MiG-19s were introduced in time to fly in the Republic Day parade in March 1966. Only a handful of Chinese technicians briefly accompanied the aircraft into Pakistan, where the first two squadrons were fully operational by September 1966. This is less than half the time normally required for such a process with aircraft of more familiar type.

In nearly three years' operation, the PAF has remained extremely satisfied with the MiG-19, which the Chinese call the F-6; and at a front-line base in the northern Punjab recently visited by *Flight*, most of the experienced pilots preferred it to the F-104As and Mirage IIIEPs operated from the same airfield. Its spoiler-booster lateral control is lighter even than the Sabre's, and its rate of roll is also said to be better, while the big Fowler-type flaps have a combat setting (at speeds of up to 430kt) for additional manoeuvrability. Because of the high thrust/weight ratio from the RD-9B Type

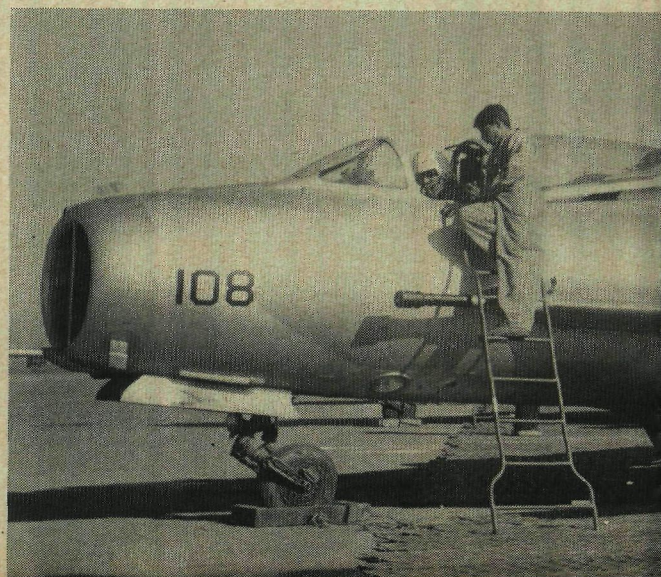


1

2



3



811 turbojets, which develop 5,843lb military thrust, or 7,166lb each with afterburning, acceleration and climb of the 20,000lb max gross MiG-19 is said to be better at low altitude than that of either the F-104A or the MiG-21, and the twin powerplants confer additional reliability.

An unusual feature of the MiG-19 is that it has a manual reversion system for its ailerons, in addition to duplicated and independent hydraulic control systems, plus standby electric actuation of the all-moving slab tail. Tailplane to stick gearing is varied automatically with airspeed, to maintain a fairly constant rate of stick force per g. Fixed armament comprises three fairly slow-firing (600 rounds per minute) 30mm cannon of Soviet origin mounted in the wing roots and beneath the starboard side of the nose. Very large muzzle brakes are fitted to these cannon, indicative of their recoil, since they fire a shell about one-third as long again as those in the French 30mm DEFA guns of the Mirage III, and their cartridge cases are correspondingly bigger. To lengthen firing times, all three guns may be selected individually or in pairs.

Underwing armament is limited by the space required for undercarriage stowage, but there are two inner "half-pylons" and a pair of outboard attachment points for drop tanks, 55mm rocket pods or other stores. It is significant that in an air force renowned for its marksmanship, MiG squadrons gained the first three places in the most recent air-to-ground gunnery competition.

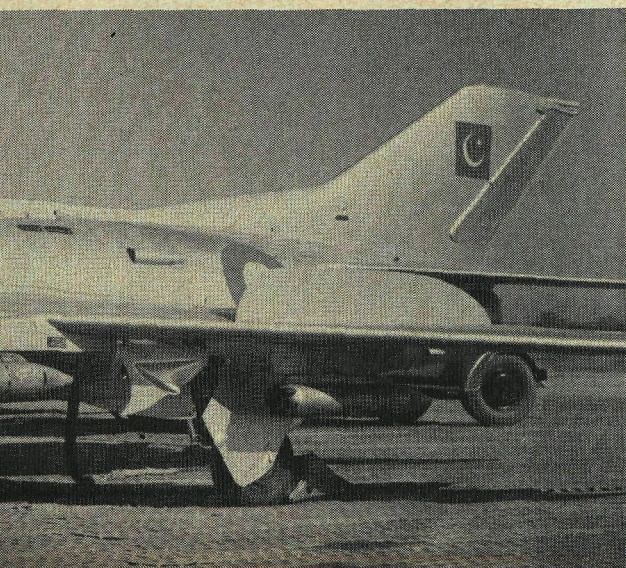
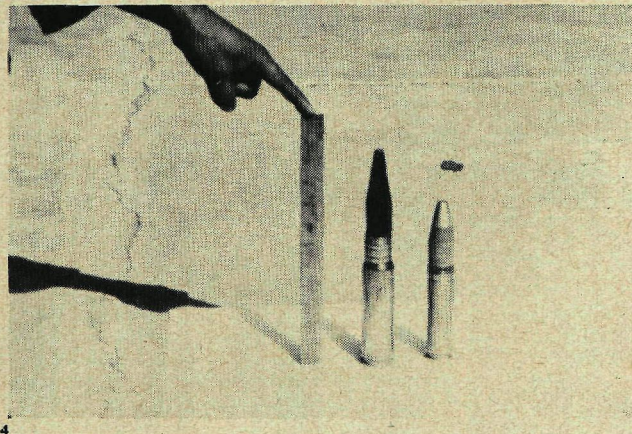
One of the main lessons of the 1965 war was the need for greater self-sufficiency in military equipment and ammunition, and this was accentuated by the arrival of the MiG-19s. Although spares from the Chinese have caused no particular

problem, and in fact have proved easier to stockpile than was the case with components for MAP aircraft, the PAF has improved its component repair facilities both at depot and station level by more than 100 per cent since 1965. Local manufacture of many minor aircraft parts such as tyres, brake pads, starters, generators and so on has also grown from virtually nothing to more than 500 items. In the case of the MiG-19, about 75 per cent of the tooling required for complete overhaul facilities had to be locally produced. Despite all these difficulties, however, serviceability rate continues to be over 80 per cent.

This is all the more remarkable when it is considered that PAF technicians have to maintain the MiGs alongside MAP-supplied F-104 Starfighters from the US, and now Mirage IIIEPs from France, at a single base, where there are also Lockheed RT-33As of a reconnaissance flight and Kaman HH-43B/SAR helicopters, not to mention an airworthy Indian-built Gnat forced down intact during the 1965 war. In passing, it may be mentioned that although the Gnat was popularly named the "Sabre slayer" in India after the 1965 war, the PAF says that it cannot trace a single recorded instance of any of its Sabres being shot down by this type of aircraft during hostilities. After flying the Gnat in simulated combat for some three years against all its first-line aircraft, the PAF concludes that it is generally inferior to the Sabre in almost everything except climb, although it is difficult to hit in a dog-fight because of its small size.

For pure interception, the PAF is still using a squadron of Lockheed F-104A Starfighters armed, like the Sabres in their day-fighter role, with Sidewinder AAMs, but with the addition of a 20mm Gatling-type cannon. An interesting illustration of PAF safety standards is that having received 12 F-104s, including one or two F-104B two-seat trainers, in 1962, the PAF is still flying nine of these original aircraft—generally regarded as very critical to operate. Two were lost during the 1965 war—one after flying through the debris of its IAF victim during air fighting, the other when trying to land in a severe dust storm. The third was flown too low for recovery during air-to-ground gunnery; so in no case was an aircraft malfunction involved. The PAF has also lost only two of its Sabres in accidents since September 1965, and one of these was the result of a bird strike.

One of the deficiencies revealed by the war with India was the lack of a night and all-weather fighter, but this is now being remedied by delivery of the Dassault Mirage IIIEP to the PAF. French sources indicate that about 24 interceptor/strike aircraft are involved in the Pakistani order, and the first fighter versions are already in service. Like the F-104 pilots, those flying the Mirage wear partial pressure suits for high-altitude operation, but will have French Matra R.530 air-to-air missiles at their disposal as well as Sidewinders. The CSP Cyrano IIB fire-control radar in the Mirage IIIE can be

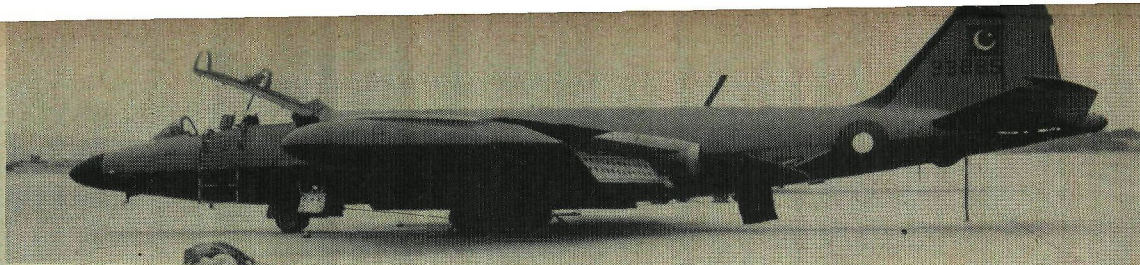


1 One of the Pakistan Air Force Mirage IIIEPs

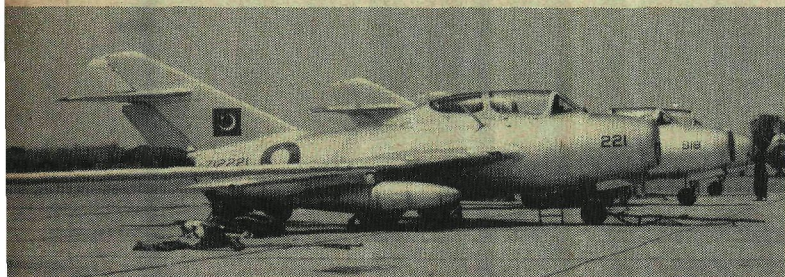
2 Main strength of the PAF still rests on its half-dozen or so squadrons of Sabres, armed as here, with Sidewinder AAMs, in addition to six 12.7mm machine-guns and external stores if required

3 Designated the F-6 by their Chinese manufacturers, the MiG-19s donated to the PAF were brand-new aircraft with an impressively high standard of workmanship. Points of interest include the large muzzle brakes for the protruding 30mm cannon, the 55mm underwing rocket pods, and the nosewheel brake unit

4 Compared with the French DEFA 30mm cannon shell on the right, the 30mm round for the MiG-19 cannon is about half as long again, and uses a correspondingly larger cartridge case



MAP-supplied Martin B-57B Canberras still equip a PAF bomber-wing. The extended nose indicates the installation of new electronics. Below, Chinese-supplied MiG-15UTI two-seat trainers used for conversion to MiG-19s



PAKISTAN'S AIR POWER...

operated in both air-to-air and air-to-ground weapon modes.

Purchase of the Mirages from France represented a major investment for the PAF, which hitherto had received nearly all its modern aircraft through aid programmes. With the entire Pakistan defence budget pegged to the equivalent of some \$514 million (£214 million) for 1968-69, the Mirage purchase will not easily be repeated, but there is ample evidence that the Soviet Union is willing to take over the aid programme where the US left off. In any case, the recent visit of the PAF C-in-C to Washington at the invitation of the USAF chief of staff indicates the possibility of resumed American interest in military assistance for Pakistan.

Long-range strike and reconnaissance duties by day and night have been undertaken since about 1959 by the PAF Bomber Wing, consisting of two squadrons of Martin B-57B, plus a few dual-control B-57C, Canberras. These US-built interdiction aircraft differ from the British Canberras in having longer noses for tandem crew accommodation, four 20mm cannon in the wings, and rotary bomb doors. They were kept going with some difficulty during the US spares prohibition, but their situation is now back to normal. Pakistan has denied Indian claims that it is operating Ilyushin Il-28s supplied by China in first-line service, but some PAF crews have been trained on this type in the People's Republic.

From its original transport force of more than 60 Bristol Freighters, the PAF has modernised its support force to a single squadron operating nine Lockheed Hercules from a joint-user base at the former RAF airfield of Chaklala, Rawalpindi. The first C-130B Hercules arrived from the US in March 1963, and the initial four aircraft were later joined by a further four transferred under MAP from Iran. The PAF Hercules fleet was then completed by the arrival of two civil-registered Lockheed Model 382 Hercules, approximating in most respects to the C-130E, which were operated on dry lease from Pakistan International Airlines by air force crews.

Although the Transport Wing has many responsibilities, including army support and tactical operations, paratroop training, aerial delivery and so on, about 60 per cent of its total effort is devoted to supply missions in the mountainous northern areas of West Pakistan. In the Karakoram, around the Indus Valley, with peaks of up to 26,000ft, most of the villages are completely dependent on air supply pending the

completion of all-weather roads, and essential commodities are either dropped by parachute or in free fall throughout the best part of the year. Very strict procedures have been established for operations in the Northern Area, where visual contact of key points must be confirmed before beginning a descent, but night deliveries are frequently undertaken with the aid of the APN-59B tactical radar of the C-130B. Even so, the hazards of operating in this area are illustrated by the disintegration in flight of one of the Lockheed 382s earlier this year, through turbulence. Since this was a PIA aircraft, however, a replacement is expected from its insurance. To fly the Model 382s, PAF crews require civil licences and operate to civil flight manual procedures. On the Northern Area sectors, the Hercules can lift up to 45,000lb in payload.

Other tasks undertaken by the C-130 fleet include long-range SAR operations, carrying survival packs and paramedical teams, while logistic support sorties are flown to and from many countries in Europe and Asia. The Chaklala Transport Wing also includes a Communications Flight, which operates the C-in-C's Fokker F.27 Friendship among other aircraft. A jet replacement for the F.27 is becoming a pressing requirement.

Pakistan Air Force Academy

Crew training and type conversion is another job handled by the Transport Wing, as the final stage of instruction before joining a squadron. Pilot training is undertaken at the PAF Academy, Risalpur, which is unusual in operating both the veteran North American T-6G or Harvard and the Cessna T-37B jet trainer for the basic stage of the syllabus. All students undergo some 15 hours' grading on the T-6 before being posted either to the T-6G Wing, where they fly 170 hours in the basic stage, or on to T-37s for a 150hr syllabus. PAF experience is that there is little difference in the end product pilot, although fewer suspensions are found necessary during the T-37 course than on the T-6s. No problems are presented by T-6 serviceability, and the old Harvard appears good for quite a few more years yet.

Apart from its own students, the PAF Academy trains pilots from many foreign air forces, particularly in the Middle East, and since its own operations are conducted in English, its syllabus pays particular attention to language studies. International training commitments also operate in reverse, and PAF instructors have taken over many of the responsibilities, for example in Saudi Arabia, of converting air force pilots to Lightnings and Hunters. These duties have given the PAF exceptionally wide operating experience on nearly all modern combat types such as the MiG-21, Su-7 and Tu-16 in the Middle East, as well as the Lightning and Hunter in Saudi Arabia and the F-104, Mirage and MiG-19 in Pakistan.

From Risalpur, jet pilots fly about 60 hours on the Lockheed T-33 at the Mauripur Conversion Unit, before undergoing operational training on the F-86F Sabre at the Fighter Leader School, Peshawar. Final operational conversion is done on three or four two-seat MiG-15UTI trainers supplied by the Chinese for the MiG-19s; Lockheed F-104Bs for the Starfighter squadrons; and, eventually, Mirage IIIDPs for the Mirage unit. Even after joining a squadron, however, PAF pilots are still liable to be weeded out if they cannot meet the very high standards required. And if they are not good enough for a fighter squadron, the tough PAF view is that they are not good enough to stay in the air force at all.